combination of the workman and the man of science that forms the civil engineer. The mere workman is to be found everywhere—I mean the man who understand the various operations of the workshop and yard, the class from which Brindley, Smeaton, Telford, and Rennie emerged, who by the native force of their minds became *architectsons*—chief, originating, and directing workmen: The man of science may be formed independently of the workshop, but it is through the workshop alone that the man of science can become what the men I have enumerated were; he may possess himself, in the office, and in the service as an assistant, of the established practitioner, of the routine of business, of the habit of using technical terms, of repeating working and other drawings, and of using set phrases and forms in the composition of a specification; he may learn to estimate and to describe the items of an estimate as they are usually described, and to attach prices to the items according to the established usage; and having made these acquisitions, he may consider himself fitted to practise as a civil engineer. He will feel himself competent to investigate any question that can arise in practice when the *data* are supplied, but he will find that questions continually arise upon which no *data* are to be obtained, and in default of practical knowledge of the matters involved, of their combinations, and of the accidents and changes to which they are liable, he must seek the judgment of others to form assumptions upon which to base his investigations;—he will readily lay out and design any class of work within the range of engineering practice, and proceed to specify and estimate the designs he may prepare, and to arrange contracts for their execution, but he will learn from the contractors as the work proceeds that this cannot be done as he may appear to have intended,—that that will not do in this particular case,—that such and such things are necessary and such others essential;—and when the works are completed he will have the mortification of finding that the variations made, and the alterations and additions effected, have made his contract a dead letter, whilst the new operations have to be paid for at such rates as custom may warrant, and which he will feel his own incompetence to check or restrain, whilst his works will have cost thirty, forty, fifty, or perhaps a hundred per cent. more than he contemplated, or had advised his employers of."

The context is equally fertile and happy in recommendations in favour of practical acquirements,—those of the use of the tools and implements of the workman,—as inducing an enduring knowledge of construction, and of the qualities and quantities of material. We are then treated to a pithy analysis of the sciences of engineering and architecture, wherein they are alternately separated or combined with reference to the different views and objects in which they have been employed, and the deductions are satisfactory and valuable. There is nothing of assumption or pretence about Professor Hosking; every thing is matter of fact, and plainly given. He says to his class:—

"In promising you information that will be useful to you in the pursuit of your professions respectively, I must beg to be understood not to promise to qualify you here to practise as architects, or as civil engineers. We offer you information whereby you may become qualified to avail yourselves more effectually of the practice of the engineer's or architect's office, and thereby to become *better* architects and *better* engineers, to your own confidence, comfort, and advantage, and for the advantage of society, to whose your services will be hereafter offered, than you would have been without such instruction and information as we offer."

And again, after a slight notice of architectural blunders and blunderers:—

"However ordinary architectural works may be directed vicariously, hydraulic architecture cannot be practised successfully by any but practical men acting upon their own responsibility, and if you do not bring science, backed by practical skill, to your work, you will find yourselves driven from the field by masons and millwrights, whom the time will call from obscurity to perform the duties for which you will have shewn yourselves unfit. I would say, then, acquire superiority over the merely practical man,—the rule-of-thumb engineer,—by the attainment of sound scientific knowledge, in addition to the mere practical skill with which he tenders his services; but do not depend upon scientific knowledge alone if you propose to become civil engineers and hope to gain your bread by the practice of civil engineering as a profession."

We think this lecture should be generally known and read; the style of the speaker, it is true, generally accords with the quality of his discourse, which is rendered more impressive by the identification of the mental and oral faculties at the moment of delivery. Thus may be the cause why, on the one hand, so many very indifferent lectures are tolerated, and, on the other, of their being so frequently classed among the ephemera of the day. That which we have just gone over with so much pleasure is of a different character, and may be *read* with advantage in every school where civil engineering and architecture are taught.

We shall recur to these lectures at an early opportunity.

THE NEW BUILDING ACT.

TO THE EDITOR OF THE BUILDER.

"Sir,—I should neither have intruded myself on your notice or that of the public, had I not found myself bound to do so in justice to a large and deserving class of persons, who have every thing to fear from any *hole and corner* alteration of the Building Act, as announced in a letter from one of your correspondents, a Mr. John Reid, Surveyor, 90, Canterbury-buildings, Lambeth, on the 18th inst.

"Now, Sir, although there may be objections urged against the present Building Act, I feel quite convinced that if the district surveyors were to do their duty properly to the public by enforcing upon all builders a rigid fulfilment of the conditions of the various clauses contained therein, there would not only not be the slightest ground for complaint in the erection of new buildings, but not even the slightest pretence for altering the building laws as at present established.

"It may not be known to the many, but it certainly is to the few, that a new bill for regulating building was introduced into the House of Commons last session, but from some cause or other, probably the haggling of some of its framers, it was not proceeded with, and subsequently it has been submitted for revision and improvement to certain architects, &c., with the intention, when they have maimed and mutilated it sufficiently, of giving the abortion birth in a covert manner this session.

"My object in troubling you with this communication is not only to draw the attention of the builders of England, and London in particular, to the fact, but to exhort them to meet at once, and, as an intelligent body, concert means for the prevention of any unfair and underhand meddling with the present act, and the keeping a watchful eye upon the progress of that which is intended to be smuggled through the House.

"I am, Sir, your obedient servant,

"February 23rd, 1843. KEYSTONE.

"P.S. In confidence I give you my address, and may trouble you again on the same subject."

STAINED GLASS WINDOWS.

We have been much gratified by the inspection of two stained glass windows which have been recently placed in the new church of St. Peter in this town, the work of our talented townsman, Mr. Wailes. In cleverness of design and brilliancy of colour they will bear comparison, we suspect, with the best specimens of the art. One is in the chancel, and is adorned with the figures of the apostles St. John and St. James the Greater; and as this part of the church contains six windows, of two lights each, an excellent opportunity is presented of collectedly depicting the twelve apostles, towards which a good beginning has been made with the two sons of Zebedee.

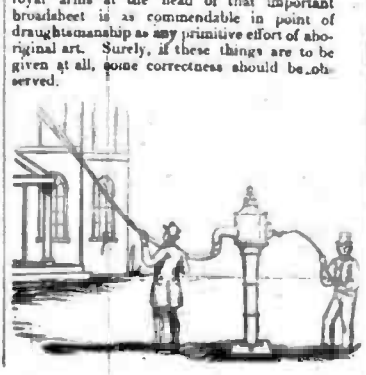
The other specimen of Mr. Wailes's art is an *obituary window*, to the memory of the late Vicar of Newcastle, the first of the kind, we believe, in this diocese. The Archdeacon of Northumberland, at his late visitation, very judiciously recommended this species of memorial, which forms at once a pious testimony to the departed, and a rich and appropriate ornament to the building where it is placed, and thus makes the indulgence of affectionate regret on the part of the survivors subservient to the permanent decoration of the house of God. In this view of the case we cannot but wish the example may be followed, more particularly in churches of Gothic architecture, where the introduction of Grecian tablets and monuments is in all cases incongruous, and most commonly prejudicial to the general effect of the building. The window we are describing is about seventeen feet in height, by nearly six feet in breadth, of the decorated style of the early part of the fourteenth century, and consists of three *lights* surmounted by three *quatrefoils*. In the highest quatrefoil is represented the Annunciation of the Blessed Virgin, and in the two lower ones, the adoration and offerings of the Magi to the infant Saviour. In the centre light, the principal figure is our Lord, holding in his hands the emblems of universal dominion, and in the other two lights stand St. Peter and St. Andrew, each of the brothers being marked by his proper ecclesiastical distinction. Below the principal figure is a representation of the late vicar, in stole and surplice, kneeling before a litany desk, and on each side are two angels bearing scrolls, on which is inscribed out of the Vulgate, "Quod cogitasti domum ædificare nomini meo, bene fecisti hoc ipsum mente tractans." At the foot of the window, and running continuously through the three lights, is the following inscription:—"In piam memoriam patris, desideratissimi Joannis Dodd, Novi Castri super Tynam per XIV. annos Vicarii, cujus consilio, patrocinio, ope hæc Sancti Petri Ecclesia ædificari cœpta est, A.S. MDCCCXL. fenestram hanc picturatam sua impensa ponendam curavit, A.S. MDCCCXLII. Gulielmus Dodd, Ecclesiæ Sancti Andreæ in eodem municipio Curator Perpetuus." The window is placed at the extremity of the south aisle, and whilst it is most creditable to the skill and ability of Mr. Wailes, it forms, at the same time, a remarkably interesting feature of the internal decoration of the building.—*Newcastle Journal.*

IMPROVED FIRE-ENGINE PUMP.

There is a little essay published by Mr. Freeman Roe, of No 70, Strand, in which he describes, for the benefit of those uninitiated in the mysteries of hydraulic machinery, the various qualities of pumps in ordinary use, and their peculiarities. His object, he states, is to solicit particular attention to the advantage of an improvement which he has made in the stuffing-box of the third class of pumps, viz. the lift-pump, which improvement consists in the use of a flexible cup or cap of leather, india-rubber, cloth, webbing, &c. so placed in connection with the joint of the handle of the pump, as to form an air-tight interior cover, and to enable him to dispense with the ordinary stuffing-box, and thereby save that loss of labour which arises from the wearing and enlarging of the hole in which the piston-rod works, and the consequent waste of water or leakage, and also in diminishing friction.

By means of this invention, Mr. Roe is enabled to convert the lift-pump into a fire-engine, for the improved joint, being fixed on the side of the pump-barrel, admits of an air vessel being formed on the head of the pump, and so that it becomes also a force-pump. It appears that Mr. Roe has fitted up one of the pumps at the House of Commons in this manner, to act as a fire-pump.

We could have wished that the accompanying diagram had been a little more explanatory, but that which we have written will be so far illustrative of this improvement, as to give a fair general idea of it, and for the rest we must refer to Mr. Roe's own essay, which, being printed in a little pocket size, can be transmitted by post for the farther enlightenment of the more curious inquirer. It contains other matter in reference to water-closet valves, &c., and being explained by small diagrams, is instructive to the general reader. The illustration given in our pages exhibits the patent pump in use as a fire-engine; but we will add another remark concerning it, which applies to a large class of graphic works and embellishments. The pump may be tolerably well drawn, but who will say so much for its workers? Anything in the shape of a man, it is thought, will do in such cases. We insist upon it that more attention should be paid to these little particulars. We could not help noticing this neglect of the properties even in the handling of *The Times* newspaper at our breakfast-table the other morning; the royal arms at the head of that important broadsheet is as commendable in point of draughtsmanship as any primitive effort of aboriginal art. Surely, if these things are to be given at all, some correctness should be observed.



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